CLAIMS

The invention claimed is:

1. A packing element for an exchange column comprising:

at least one plate formed from sheet material shaped to form a plurality of corrugations on each side of the plate as a series of peaks separated by valleys;

a plurality of apertures arranged across at least a portion of the plate; and

a plurality of tangs extending outwardly from the surface of the plate surrounding at least some of the apertures, wherein at least some of the outwardly extending tangs have been deformed toward the plate.

2. The packing element of claim 1, wherein the sheet material is one of stainless steel, aluminum, carbon steel or a polymeric material.

3. The packing element of claim 1, wherein a plurality of the plates are secured together in a bundle to form a brick.

4. The packing element of claim 3, wherein the corrugations of adjacent plates are arranged in a crisscrossing relationship.

5. The packing element of claim 5, wherein the corrugations of adjacent plates are in a contacting relationship.

6. The packing element of claim 1, wherein the apertures are of a round or square configuration.

7. The packing element of claim 1, wherein the apertures are of the same size.

8. The packing element of claim 1, wherein the apertures are two or more sizes.

9. The packing element of claim 1, wherein the number of tangs surrounding the apertures is four.

10. The packing element of claim 9, wherein the tangs are formed by punching.

11. The packing element of claim 10, wherein at least some of said tangs have a triangular shape with a base, two sides and a peak.

12. The packing element of claim 11, wherein the base of the tang is attached to and integral with the unperforated portion of the plate.

13. The packing element of claim 12, wherein the tangs are bent inwardly upon themselves.

14. The packing element of claim 13, wherein the tangs are splayed outwardly from the associated aperture during the formation of the tangs

15. The packing element of claim 14, wherein the tangs are bent in a direction away from the associated aperture.

16. The packing of claim 1, further comprising:

a plurality of larger apertures without surrounding tangs.

17. The packing of claim 1, wherein the plate has opposed faces and wherein the tangs extend outwardly from at least one face of the plate.

18. The packing of claim 17, wherein the tangs extend outwardly from both faces of the plate.

19. The packing element of claim 18, wherein the tangs surrounding adjacent apertures extend in different directions.

20. A method for making a packing element for an exchange column, the method comprising:

forming a plurality of apertures across at least a portion of a plate formed of sheet material such that at least some of the apertures are surrounded by a plurality of outwardly extending tangs; and

shaping the plate to form a plurality of corrugations on each side of the plate as a series of peaks separated by valleys,

wherein the shaping of the corrugated plate causes at least some of the plurality of tangs to be deformed toward the plate.

21. The method of claim 20, wherein the corrugations are formed of the sheet by crimping the sheet.

22. The method of claim 20, wherein the apertures and tangs are formed by punching.

23. The method of claim 22, wherein the tangs are bent inwardly upon themselves.

24. The method of claim 23, wherein the tangs are splayed outwardly from the associated aperture during the formation of the tangs.

25. The method of claim 24, wherein the tangs are bent in a direction away from the associated aperture.

26. A mass transfer column comprising:

an external shell defining an open internal region; and

one or more packing elements are positioned within the internal region,

wherein the one or more of the packing elements comprise at least one plate formed from sheet material that has been shaped to form a plurality of corrugations on each side of the plate as a series of peaks separated by valleys,

a plurality of apertures arranged across at least a portion of the plate and

a plurality of tangs extending outwardly from the surface of the plate surrounding at least some of the apertures, wherein at least some of the outwardly extending tangs have been deformed toward the plate.

27. The mass transfer column of claim 26, wherein the packing elements are placed in the mass transfer column with the plates extending upright.

28. The mass transfer column of claim 27, wherein the corrugations of the plates are arranged at an angle to a vertical axis of the column.

29. The mass transfer column of claim 28, further comprising:

multiple adjacent layers of packing elements.